BUSINESS OPPORTUNITIES IN AFRL'S PROPULSION DIRECTORATE

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Associate Director

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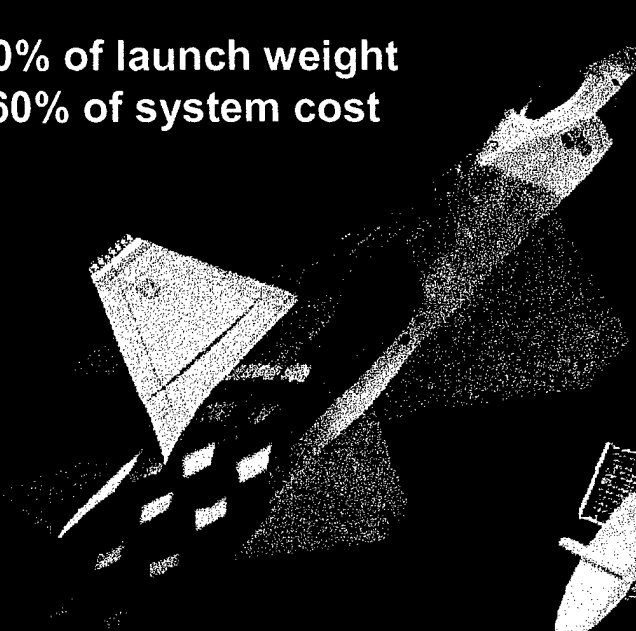
41 items enclosed

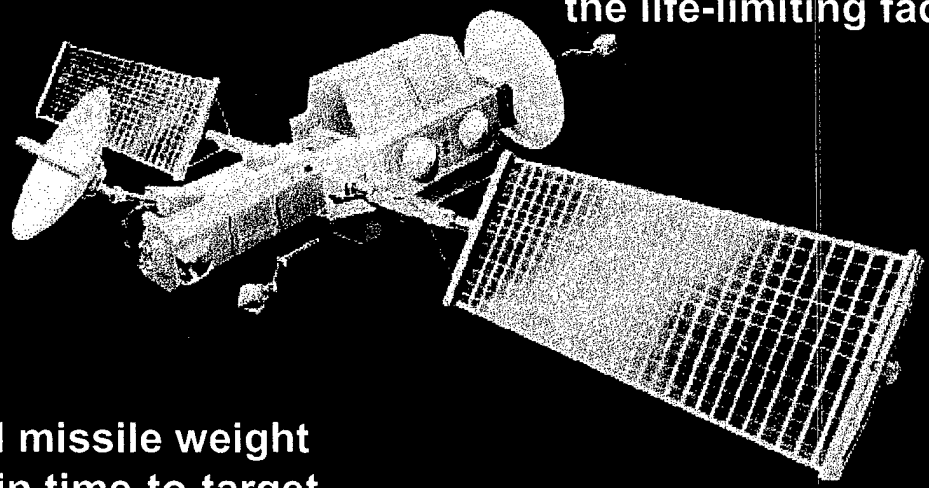
Propulsion Is...

70-90% of launch weight
40-60% of system cost

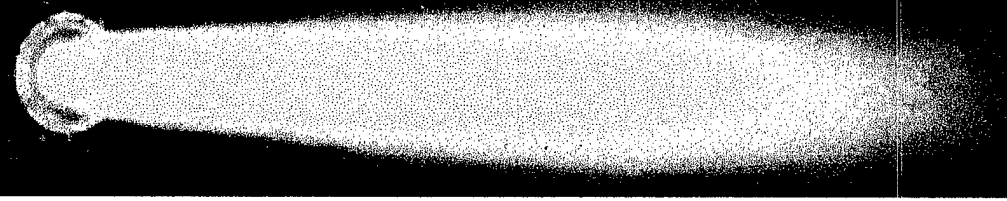


40-60% of aircraft TOGW
20-40% of system life cycle cost

50-70% of satellite weight
25-40% of system cost
the life-limiting factor



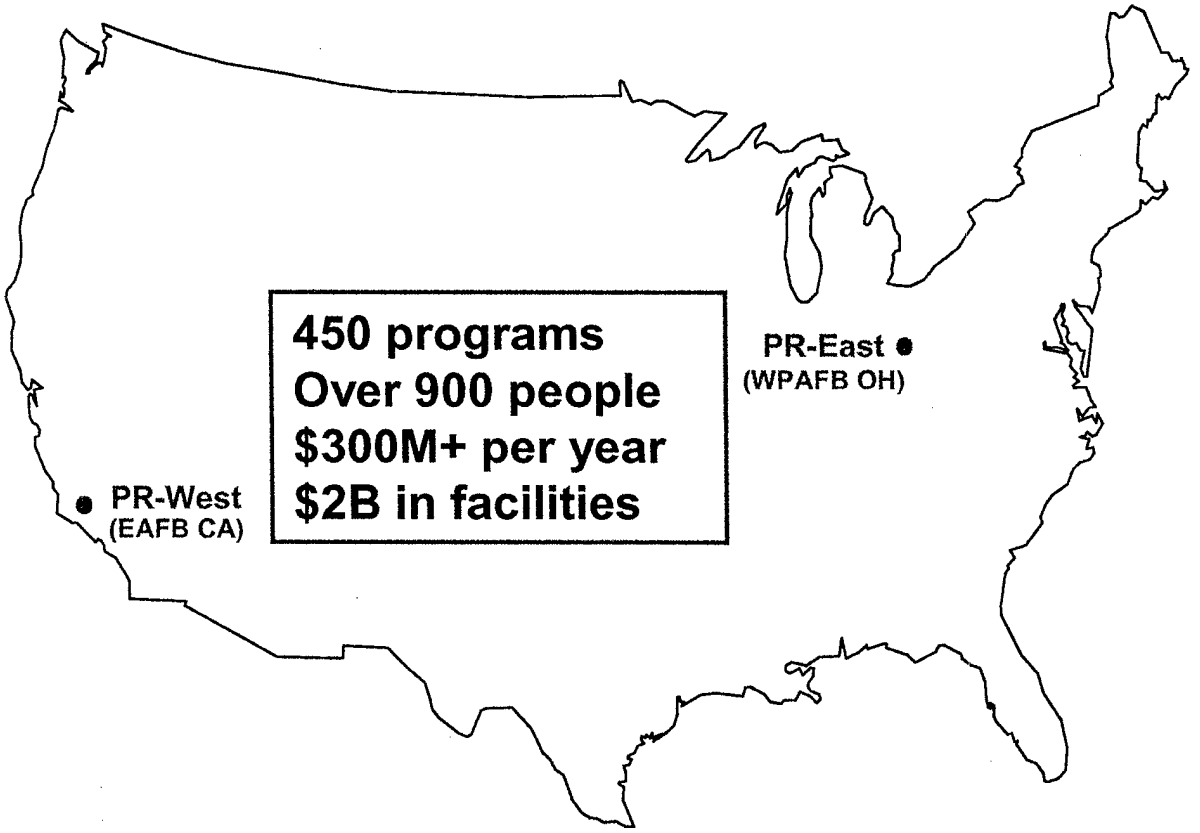
60-80% of tactical missile weight
the critical factor in time-to-target



AFRL's Propulsion Directorate

One stop shopping for:

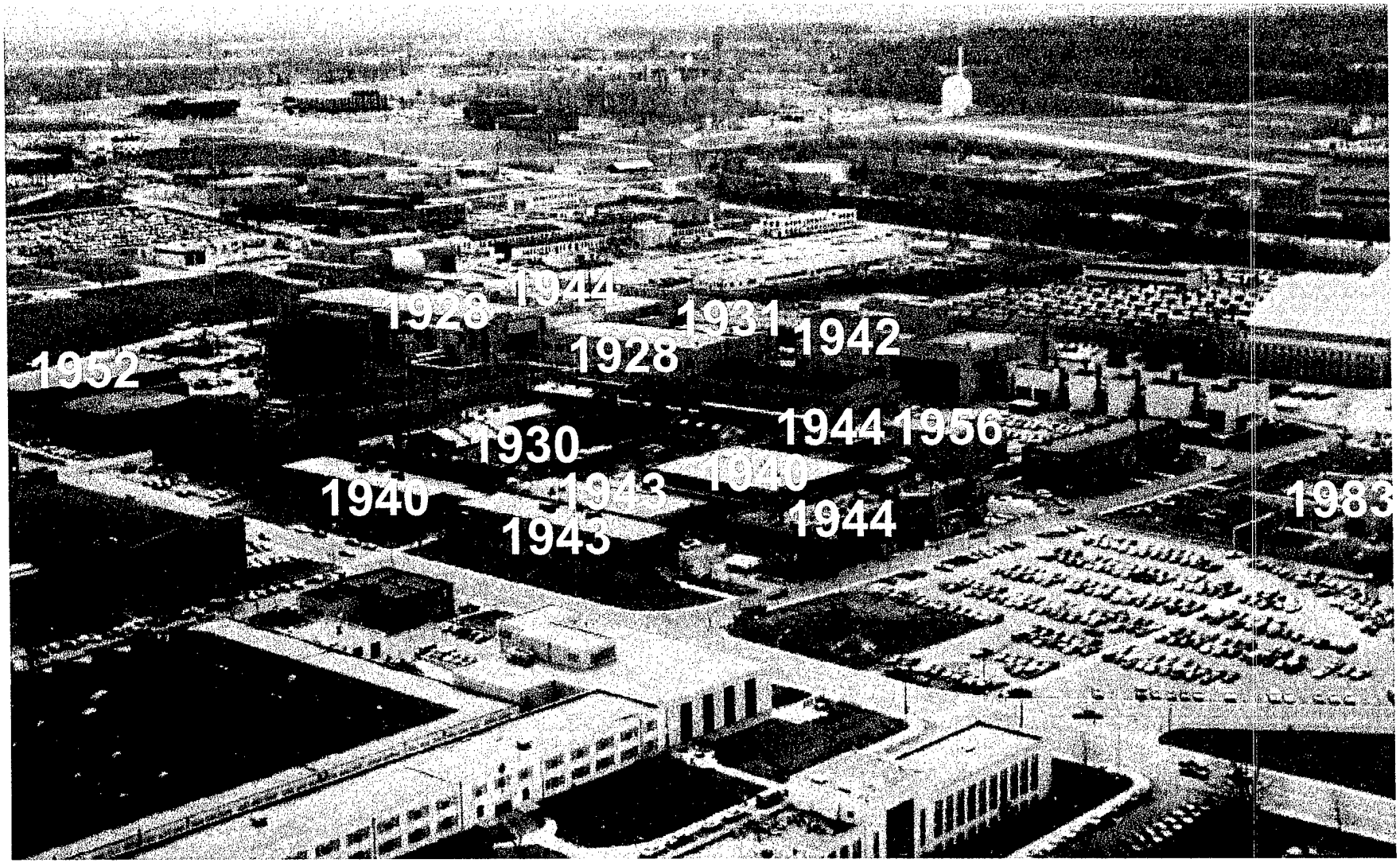
- turbine engines
- ramjet engines
- rocket engines
- combined-cycle engines
- satellite propulsion
- advanced propulsion
- fuels and propellants
- aircraft power
- space power
- weapon power



PR-East:
Wright-Patterson AFB, Ohio

294 government people
over $200 million in FY02

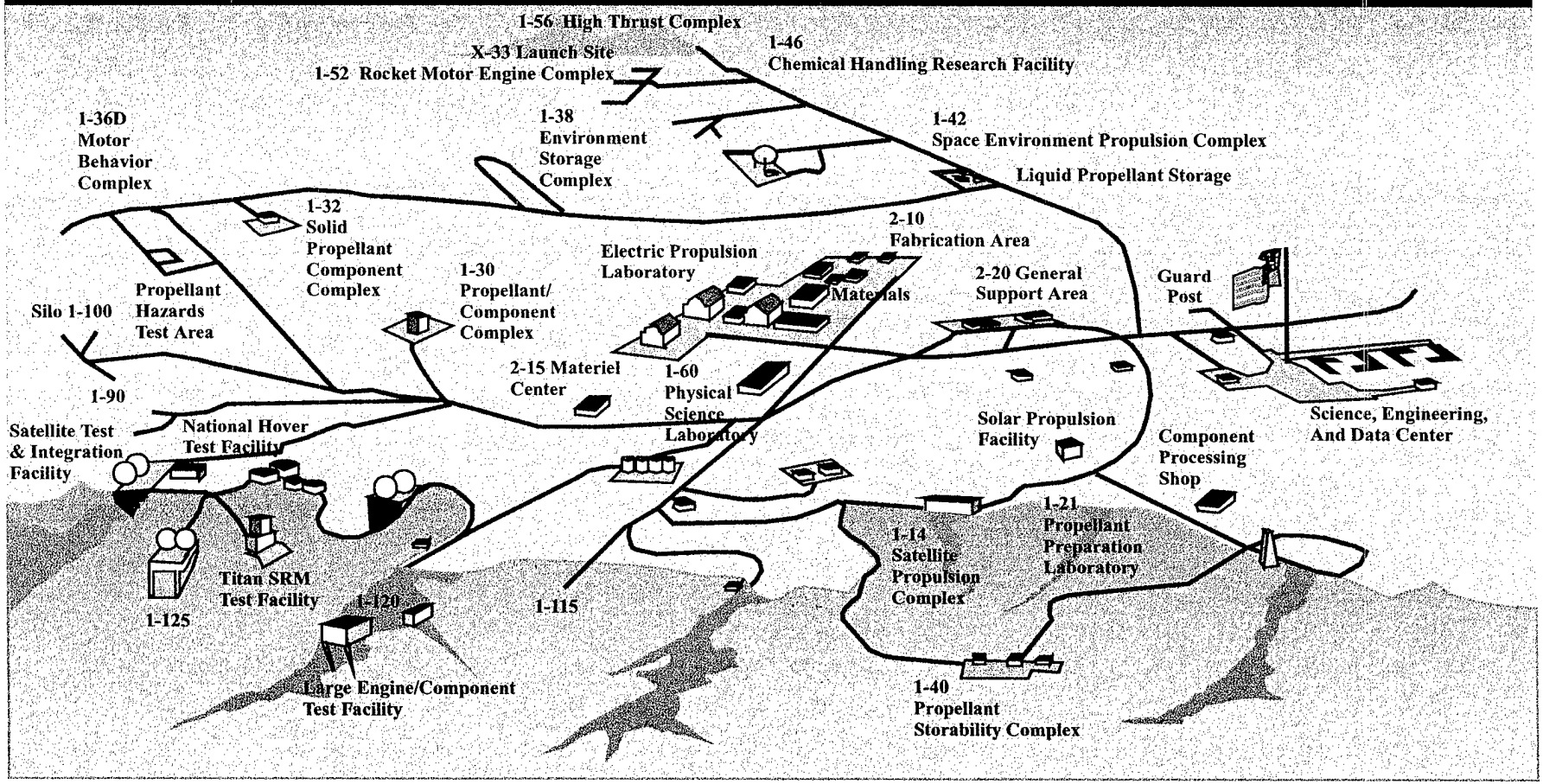
300 programs with 130 companies
24 buildings on 40 acres, worth $650 million



PR-West: Edwards AFB, California

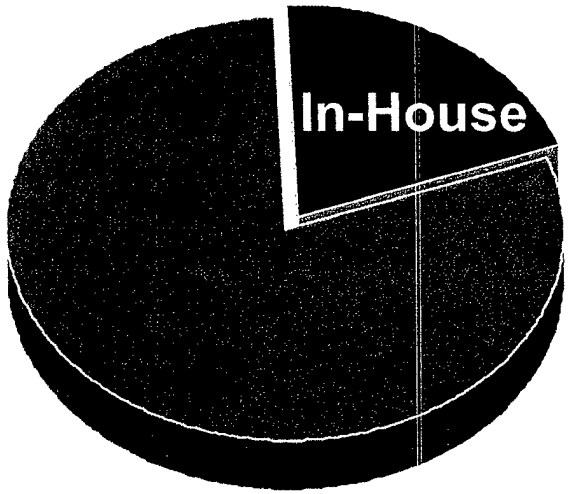
182 government people
Over $100 million in FY02

136 programs with 10 companies
215 buildings on 65 sq miles, worth $1.2 billion



We Do In-House R&D To . . .

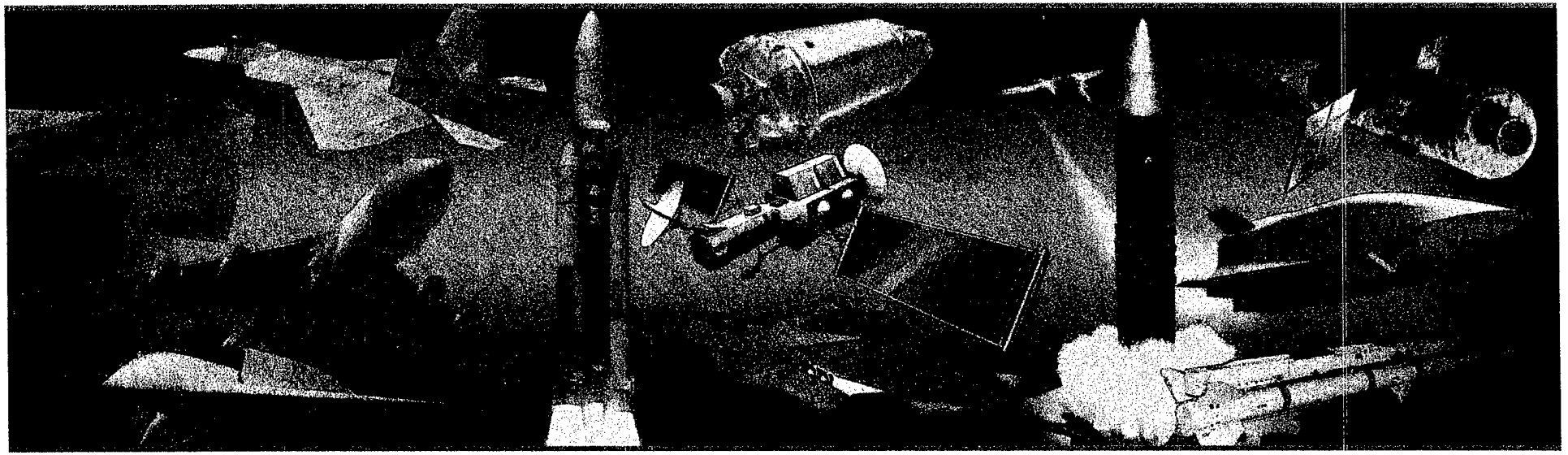
- Advance militarily important technology in areas with little or no industrial base or interest
- Use our sometimes-unique facilities to solve important problems
- Independently verify contractor findings
- Maintain the technical expertise needed to
  - be smart buyers for the Air Force
  - help solve Air Force problems
  - keep the respect of industry
  - be a peer in the scientific community



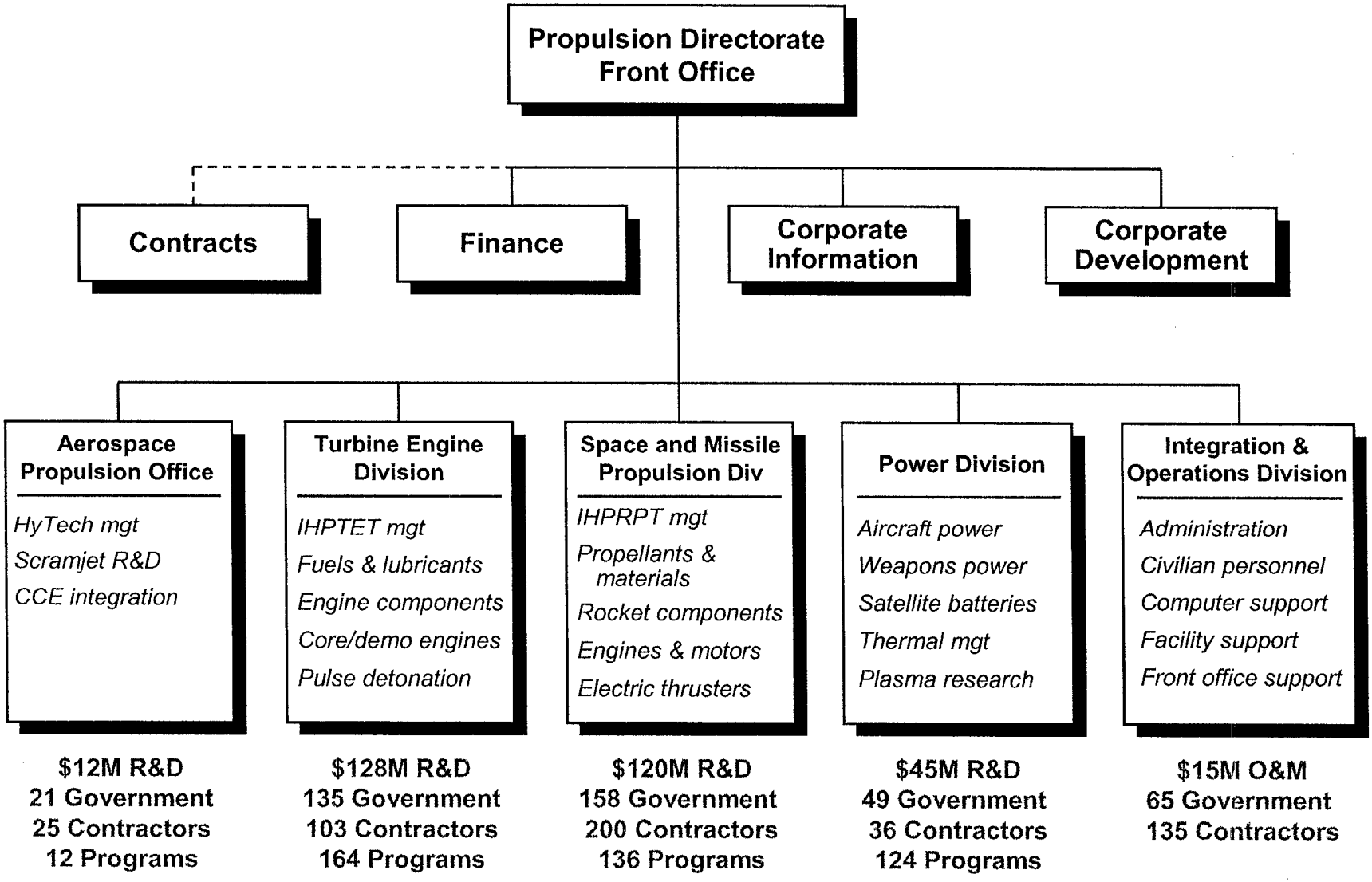
- Quickly exploit new technological opportunities when there isn't time for a contract
- Help recruit and train good people

Propulsion Directorate Thrusts

Air Platforms	Space Platforms	Weapons
Aircraft	Launch Vehicles	Air-Launched Missiles
UAVs	Orbit Transfer	Strategic Missiles
	Spacecraft	Directed Energy



Turbine Engines	Liquid & Solid Rockets	Solid & Hybrid Rockets
Fuels & Lubricants	Propellants	Ramjets & Scramjets
"Secondary" Power	Batteries & Thermal Mgt	Megawatt-Class Power



(as of 31 May 2002)

Business Opportunities

	6.1	6.2	6.3	SBIR	CRADAs	EPAs
On-Site Support	X	X			X	
Small Business				X	X	
Engine Manufacturers		X	X		X	
Other R&D Firms		X	~X		X	
Universities	(X)	X			X	X

Our FY03 New Starts

The Fine Print

These items are not to be construed as a request for proposal, a commitment by the Government to issue a contract, or as a basis of a claim against the Government. All information given is subject to change.

Hydrocarbon Boost Demo

- **Objective: Develop and demonstrate advanced technologies for a hydrocarbon fueled reusable rocket engine**
- **Solicitation Type: PRDA (one or more contracts)**
- **Estimated Cost: $40,700K**
- **Duration: 60 months**
- **For more information, contact**
  drew.deqeorge@edwards.af.mil

Post Boost Control System Demo

- **Objective: Develop and demonstrate advanced technologies for post boost control system for ballistic missiles**
- **Solicitation Type: PRDA (one or more contracts)**
- **Estimated Cost: $7,275K**
- **Duration: 36 months**
- **For more information, contact drew.degeorge@edwards.af.mil**

Hypersonic Vehicle Booster

- **Objective: Develop booster technology to support hypersonic vehicle demonstrator**
- **Solicitation Type: PRDA**
- **Estimated Cost: $TBD K**
- **Duration: TBD months**
- **For more information, contact drew.degeorge@edwards.af.mil**

TSSS 2 Missile Propulsion Boost Demo

- **Objective:** Develop and demonstrate missile propulsion technology for future ballistic missiles
- **Solicitation Type:** PRDA (one or more contracts)
- **Estimated Cost:** $30,550K
- **Duration:** 60 months
- **For more information, contact** drew.degeorge@edwards.af.mil

Advanced Tactical Missile Technology

- **Objective:** Explore and develop missile propulsion technologies for advanced tactical missiles
- **Solicitation Type:** PRDA (one or more contracts)
- **Estimated Cost:** $20,750K
- **Duration:** 60 months
- **For more information, contact** drew.degeorge@edwards.af.mil

Micropropulsion Demo

- **Objective: Develop and demonstrate micropropulsion technology for future microsatellites**
- **Solicitation Type: PRDA (one or more contracts)**
- **Estimated Cost: $4,699K**
- **Duration: 60 months**
- **For more information, contact**
  drew.degeorge@edwards.af.mil

SBIRs in Space & Missile Propulsion

(typically $75,000 or less)

- Tactical missile thrust vectoring steering technologies
- Combined cycle hybrid rocket/solid fuel ramjet motor
- Materials to reduce the weight of rocket motor cases
- Deployable structures for membrane reflectors
- Accelerator technologies for in-space propulsion
- Launcher for miniature satellites
- For more information, contact Miguel.maldonado@wpafb.af.mil

Long Range Strike/Space Access Propulsion Screening Studies

- Objective: Study propulsion systems and engine cycles suitable for long range strike aircraft and space access vehicles
- Solicitation Type: Existing TO contract or PRDA
- Estimated Cost: 3 or 4 - $200,000 studies
- Duration: 6 – 12 months
- For more information, contact Robert.mercier@wpafb.af.mil

SBIRs in Advanced Propulsion

(typically $75,000 or less)

- Supersonic combustion transient analysis and control
- Analytical and diagnostic tools for heat utilization effects on high-speed aircraft
- Aerospace vehicle propulsion performance, cost, and operability analysis
- For more information, contact Miguel.maldonado@wpafb.af.mil

VAATE PRDA 1

(Versatile Affordable Advanced Turbine Engines)

- Objective: Start developing technologies for high-speed (>M2) *cruise* propulsion
- Solicitation Type: PRDA
- Estimated Cost: Up to $35 million
- Duration: 24 – 48 months
- For more information, contact William.koop@wpafb.af.mil

SBIRs in Turbine Engines

(typically $75,000 or less)

- High-temperature engine acoustic/screech sensor
- Engine health monitoring system design technology
- Lean blowout modeling and simulation (M&S)
- M&S for designing "intelligent" rotor bearing systems
- Oil-free rotor support for small turbine engines
- Non-intrusive T4.1 gas path sensors
- Fluidic-controlled inlet guide vanes and stators
- Inspection systems for installation and aviation security
- For more information, contact Miguel.maldonado@wpafb.af.mil

Optical Wide Band Gap Power Study

- Objective: Investigate photonics for aircraft power electronics switching to reduce weight and EM susceptibility
- Solicitation Type: RFP
- Estimated Cost: $500,000
- Duration: 24 months
- For more information, contact John.nairus@wpafb.af.mil

P&P for PAD

(Propulsion and Power for Persistent Area Dominance)

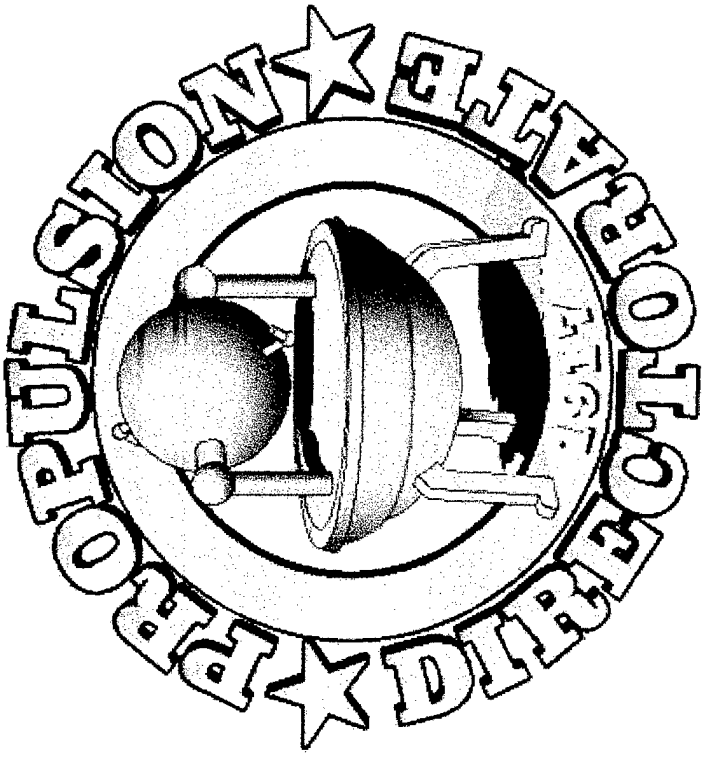
- Objective: Develop non-traditional *fuel cell* propulsion for loitering weapons
- Solicitation Type: RFP
- Estimated Cost: $2.9 million
- Duration: 48 months
- For more information, contact John.nairus@wpafb.af.mil

High-Power, Low Duty Cycle Electrical Generator

- Objective: Develop megawatt-class electrical generator for DEW applications
- Solicitation Type: Down-select from current design efforts
- Estimated Cost: TBD
- Duration: 48 months
- For more information, contact John.nairus@wpafb.af.mil

SBIRs in Power Technology
(typically $75,000 or less)

- Circuit protection using arc fault circuit interrupters
- High current (40 – 100 amp) solid state power controllers
- Health monitoring of electrical power wiring and components
- Cost reduction of power subsystems integration networks
- Advanced electrolytes for lithium-ion aircraft batteries
- Nonflammable lithium-ion battery electrolytes
- Separator materials for nickel-hydrogen space batteries
- Miniature fuel cell power generators
- Logistic-fueled fuel cell technologies
- Monopropellants to eliminate hydrazine in power systems
- MEMS applications in aerospace vehicle power systems
- Oil-free bearing technologies for aerospace power systems
- Spray cooling in micro-gravity
- For more information, contact Miguel.maldonado@wpafb.af.mil


PROPULSION ★ DIRECTE ★ ELECTRIQUE